ISAYENKO N. P.

AF:
.R93612

SOKHRANENIYE I POVYSHENIYE PLODORODIYA POCHVY PRI OSVOYENII TSELINNYKH ZEMEL'
(NEW METHODS FOR CONSERVATION AND INCREASED FERTILITY OF VIRGIN SOILS, BY)
N. P. ISAYENKO, V. A. FRANTSESON,(1) S. P. GOR'UNOVA. MOSKVA, SEL'KHOZGIZ, 1957.
180 P. ILLUS., TABLES.

ISAYENKO, N.P., kand.sel'skokhozyaystvennykh nauk; BOGACHIK, I.A.

Methods for estimating the economic aspects of principal cultivation practices. Zemledelie 6 no.10:40-46 O '58.
(Agriculture--Economic aspects) (MIRA 11:11)

PAK, Aleksey Andreyevich; ISAYENKO, N.P.; UGAY, M.A.

[Diversified state farms on virgin lands; based on the example of the "Kustanaiskii" State Farm, Kustanay Province] Mnogootraslevoi sovkhoz na tselinnykh zemliakh; na primere sovkhoza "Kustanaiskii," Kustanaiskoi oblasti. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1959. 115 p. (MIRA 12:12)

(Kustanay Province--State farms)

ISAYENKO, Nikolay Petrovich; MOISEYEV, M.I., red.

[Economic management plan for collective and state farms] Organizatsionno-khoziaistvennyi plan kolkhoza i sovkhoza. Pod red. M.I.Moiseeva. Moskva, Sovetskaia Rossiia, 1961. 31 p. (MIRA 16:4)

(Collective farms) (State farms)

MATYAKH, F.P.; VDOVICHENKO, V.T. [Vdovychenko, V.T.]; ISAYENKO, O.F. [Isaienko, O.F.]

Calculating the multiplicity factor of the recirculation of the products of reaction in the deep thermal chlorination of methane. Khim. prom. [Ukr.] no.1:54-60 Ja-Mr '63 (MIRA 17:7)

MATYAKH, F.A.; TSYBUL'SKAYA, Z.I.; KRAVETSKIY, L.I.; ISAYENKO, O.F.

Determining the technological parameters of injection mixers for deep thermal chlorination of methane. Khim. prom. 41 no.5:347-352 My '65. (MIRA 18:6)

ALEKSEYEV, G.P.; ANDON'YEV, V.S.; ARNGOL'D, A.V.; BASKIN, S.M.; BASHMAKOV, N.A.; BEREZIN, V.D.; BERMAN, V.A.; BIYANOV, T.F.; GORBACHEV, V.N.; GRECHKO, I.A.; GRINBUKH, G.S.; GROMOV, M.F.; GUSEV, A.I.; DEMENT'YEV, N.S.; DMITRIYEV, V.P.; DUL'KIN, V.Ya.; ZVANSKIY, M.I.; ZENKEVICH, D.K.; IVANOV, B.V.; INYAKIN, A.Ya.; ISAYENKO, P.I.; KIPRIYANOV, I.A.; KITASHOV, I.S.; KOZHEVNIKOV, N.N.; KORMYAGIN, B.V.; KROKHIN, S.A.; KUDOYAROV, L.I.; KUDRYAVTSEV, G.M.; LARIN, S.G.; LEBEDEV , V.P.; LEVCHENKOV, P.N.; LEMZIKOV, A.K.; LIPGART, B.K.; LOPAREV, A.T.; MALYGIN, G.F.; MILOVIDOVA, S.A.; MIRONOV, P.I.; MIKHAYLOV, B.V., kand. tekhn. nauk; MUSTAFIN, Kh.Sh., kand. tekhn. nauk; NAZIMOV, A.D.; NEFEDOV, D.Ye.; NIKIFOROV, I.V.; NIKULIN, I.A.; OKOROCHKOV, V.P.; PAVLENKO, I.M.; PODROBINNIK, G.M.; POLYAKOV, G.Ya.; PUTILIN, V.S.; RUDNIK, A.G.; RUMYANTSEV, Yu.S.; SAZONOV, N.N.; SAZONOV, N.F.; SAULIDI, I.P.; SDOBNIKOV, D.V.; SEMENOV, N.A.; SKRIPCHINSKIY, I.I.; SOKOLOV, N.F.; STEPANOV, P.P.; TARAKANOV, V.S.; TREGUBOV, A.I.; TRIGER, N.L.; TROITSKIY, A.D.; FOKIN, F.F.; TSAREV, B.F.; TSETSULIN, N.A.; CHUBOV, V.Ye., kand. tekhn. nauk; ENGEL', F.F.; YUROVSKIY, Ya.G.; YAKUBOVSKIY, B.Ya., prof.; YASTREBOV, M.P.; KAMZIN, I.V., prof., glav. red.; MALYSHEV, N.A., zam. glav. red.; MEL'NIKOV, A.M., zam. glav. red.; RAZIN, N.V., zam. glav. red. i red. toma; VARPAKHOVICH, A.F., red.; PETROV, G.D., red.; SARKISOV, M.A., prof., red.; SARUKHANOV, G.L., red.; SEVAST'YANOV, V.I., red.; SMIRNOV, K.I., red.; GOTMAN, T.P., red.; BUL'DYAYEV, N.A., tekhn. red.

(Continued on next card)

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000618810020-5"

ALEKSEYEV, G.P.---(continued). Card 2.

[Volga Hydroelectric Power Station; a technical report on the design and construction of the Volga Hydroelectric Power Station (Lenin), 1950-1958] Volzhskaia gidroelektrostantsiia; tekhnicheskii otchet o proektirovanii i stroitel'stve Volzhskoi GES imeni V.I.Lenina, 1950-1958 gg. V dvukh tomakh. Moskva, Gosenergoizdat. Vol.2.[Organization and execution of construtions and assembly work] Organizatsiia i proizvodstvo stroitel'no-montazhnykh rabot. Red. toma: N.V.Razin, A.V.Arngol'd, N.L. Triger. 1962. 591 p. (MIRA 16:2)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Razin).
(Volga Hydroelectric Power Station (Lenin)--Design and construction)

ISAYENKO, P.S.

Work experience of the "Stroitel'" trust. Gor.khoz.Mosk. 31 no.8:3-6 Ag '57. (MIRA 10:9)

1. Upravlyayushchiy trestom "Stroitel'."
(Moscow--Building)

ALEKSEYEV, G.Ya.; ISAYENKO, P.S.; NOVITCHENKO, K.M.; FIZDEL', I.A.; SIDOROV, Ye. N., red.; MORSKOY, K.L., red. izd-va.; LAGUTINA, I.M., tekhn.red.

[On Moscow construction sites; practices of the Moscow State Trust "Stroitel".] Na stroikakh Moskvy; iz opyta raboty Moskovskogo Gosudarstvennogo ordena Trudovogo Krasnogo Znameni Tresta "Stroitel'." Moskva, Gos. izd-vo lit-ry po stroit., arkhit, i stroit. materialam, 1958. 89 p. (MIRA 11:12)

(Moscow--Construction industry)

ISAYENKO, T.V.

Combating root knot nematodes in Turkmenia. Trudy probl. i tem. soveshch. no.3:74-78 '54. (MLRA 8:5)

1. Otdel bor'by s vreditelyami i boleznyami sel'skokhozyaystvennykh rasteniy pri Ministerstve sel'skogo khozyaystva Turkmenskoy SSR.

(Turkmenistan--Root knot) (Root knot--Turkmenistan)

KOVALEV, A.L.; ISAYENKO, V.F.; KUZNETSOV, A.M.

Apparatus for determining the speed rates of air flow. Khim. volok. no.4:72-73 '65. (MIRA 18:8)

1. VNIIMSV, Chernigov.

ISAYENKO, V.I., vetvrach (Kraymskaya oblast')

Disinfection apparatus mounted on a tractor. Veterinariia 35 no.8:80-81 Ag '58. (MIRA 11:9)
(Spraying and dusting equipment)

SOV/86-58-10-36/40

AUTHOR: Isayenko, V.I., Sen Engr Lt, and Isayev, M.D., Sen Tec Lt

TITLE: Shifting the Potentiometer of the Range Unit (Perenos potentsiometra bloka dal'nosti)

PERIODICAL: Vestnik vozdushnogo flota, 1958, Nr 10, p 86 (USSR)

ABSTRACT: The authors state that in their unit they decided to change the position of the "Transconductance" potentiometer on the front panel of the range unit so that the aircraft radio range finder can be calibrated with greater convenience during the routine maintenance work and without removing the range unit from the aircraft. One photo.

Card 1/1

ISAYENKO, V. I.

USSR/Physics - Light Measurement Dec 52

"Optical Method of Measuring Intensity of Light, Brightness and Flux," A. A. Volkenshteyn, D. I. Andreyev and V. I. Isayenko

"Zhur Tekh Fiziki" Vol 22, No 12, pp 2026-2037

Optical measuring method was tested theoretically and experimentally. Results showed adequate accuracy of measurements. The equipment may be used in plants and on expeditions. Received 22 Sep 52.

PA 240T105

USSR/Physics - Electricity, Discharge phenomena FD-3203

Card 1/1 Pub 153-12/28

Author : Vanyukov, M. P., Isayenko V. I., and Khazov, L. D.

Title : Investigation of light phenomena associated with the growth of the channel of a spark discharge

Periodical : Zhur. Tekh. Fiz. 25, No 7, 1248-1256, 1955

Abstract : Experimental investigation using an electron-optical converter, of the space-time expansion of the visible and infrared luminescence of a spark discharge channel, and of the propagation of the shock wave generated by the discharge revealed: (a) the shock wave separated from the plasma of the discharge; (b) a layer of heated, nonionized gas emitting infrared radiation in the form of arc lines was formed between the shock wave and the plasma; (c) the temperature of the discharge in inert gases increases with the atomic weight of the gas; (d) the average channel temperature was determined from measurements of the spectral density of energy brightness to be 57,000°K. Authors thanked Acad. A. A. Lebedev for assistance. Diagram, graphs, photos. Ten references: seven USSR.

Institution :

Submitted : November 24, 1954

Isayenko - V.I.

IVANYUKOV, M.P., kand.fiz.-mat.nauk; DORRETSOV, A.F., inzh.; ISAYENKO, V.I., inzh.; MAK, A.A., inzh.

Sectional high-reessure spark discharge lamp. Svetotekhnika 4 no.4:9-11 Ap '58. (MIRA 11:4)

1.Gosudarstvennyy opticheskiy institut.
(Electric lamps)

SOV/120-58-6-17/32

AUTHORS: Vanyukov, M. P. and Isayenko, V. I.

TITLE: A Pulsing Tube Circuit for Obtaining a High Discharge Repetition Rate (Skhema vklyucheniya impul'snykh lamp s bol'shoy chastotoy povtoreniya vspyshek)

PERIODICAL: Pribory i tekhnika eksperimenta, 1958, Nr 6, pp 85-88 (USSR)

ABSTRACT: Stroboscopic tubes are normally connected in a circuit consisting of two inductances, two capacitors and an auxiliary inductance for triggering the tube; the circuit is shown in Fig.1. One of the difficulties in employing the circuit is that comparatively low repetition frequencies are possible. A more elaborate circuit, based on the same principle, was therefore developed. This consists of a supply unit (see Fig.2) and a triggering unit (see Fig.3). The circuit is suitable for operating a stroboscopic triode (marked S in Fig.2). The storage capacitors C_1 and C_2 in the circuit are charged from a constant voltage source through a choke L, by means of two groups of high-voltage diodes, B_1 and B_2. The triggering unit consists of a frequency generator (a multivibrator) and a delay circuit;

Card 1/2

A Pulsing Tube Circuit for Obtaining a High Discharge Repetition Rate

by means of two blocking oscillators it produces two pulses of 3 μs duration, which are spaced at 15 μs apart. The first pulse of the triggering unit is employed to close the oscillatory circuit consisting of C_1 and L_0 in the supply unit, while the second pulse triggers a thyratron which supplies a pulse to the triggering electrode of the stroboscopic tube. The diodes B_3 and B_4 in the supply circuit of Fig.2 provide clamps for the storage capacitors, so that these cannot be charged negatively. By employing the circuit it is possible to drive the tube at repetition rates up to 4000 pps, but the discharge energy is reduced with increasing repetition rates. Thus, for example, at 500 pps the energy per discharge is 3.5 joules while at 4000 pps it is only 0.23 joules. The paper contains 3 figures, 1 table and 12 references, of which 4 are English, 5 are German and 3 are Soviet.

ASSOCIATION: Gosudarstvennyy opticheskiy institut(State Optics Institute)

SUBMITTED: December 9, 1957.

VANYUKOV, M.P.; DOBRETSOV, A.F.; ISAYENKO, V.I.; MAK, A.A.

Powerful pulse light source. Usp.nauch.fot. 6:53-57 '59.
(MIRA 13:6)

(Electric discharge lighting)
(Photography, Flashlight)

VANYUKOV, M.P., kand.fiz.-matem.nauk; ISAYENKO, V.I., inzh.

Load limits of spark discharge tubes. Svetotekhnika 6 no.3: 7-11 Mr '60. (MIRA 13:6)

1. Gosudarstvennyy opticheskiy institut.
(Electric discharge lighting)

33152

9,4120 (1163)

S/120/61/000/006/021/041
E032/E514

AUTHORS: Isayenko, V.I. and Travleyev, G.N.

TITLE: A study of the electrical characteristics of discharge tubes under recurrent discharge conditions

PERIODICAL: Pribory i tekhnika eksperimenta, no.6, 1961, 103-107

TEXT: A block diagram of the apparatus is shown in Fig.1. It consists of two channels, one of which (1-5) controls the operation of the discharge tube (ИЛ), whilst the other (6-11) is used to determine the operational conditions and to restore the breakdown voltage. The spark-gap is switched at a high repetition rate by circuits which ensure that the charging of the capacitor (C) occurs during a small fraction of the repetition period. The capacitor is charged by a triode pulser (ГМИ- 30). The latter is normally biased off and is gated by 5-20 μsec controlling pulses. The latter are formed by the control-pulse generator 2 from a sinusoidal voltage produced by the master oscillator 1 and are fed through the amplifier 3 to the charging tubes in block 5. Two microseconds after the charging tubes have been cut off, a high-voltage pulse is generated by the

Card 1/1 3

4

oscillator 4 and is applied across the discharge tube (ИЛ) and initiates the discharge. In the measuring channel the control pulses enter a frequency divider 6 which can select every 2nd, 4th, 8th, 16th or 32nd pulse. A built-in d e la y circuit can shift these pulses to any required position within the repetition period. They are then fed into 7 which produces additional control pulses which are fed through the amplifier 3 to the charging tubes and produce testing-voltage pulses across the spark-gap. These test pulses have practically no effect on the power conditions in the discharge tube. When the test pulse is applied, the oscillator 4 is off and, therefore, the discharge tube will fire only when the magnitude of the test pulse exceeds the breakdown voltage at the corresponding instant of time. In order to determine the probability distribution of breakdown voltages, the potential difference across the spark-gap is fed to the time selector 8 through the capacitive divider C_1, C_2. The spread in the breakdown voltages is recorded by the amplitude discriminator 9 and the scalar 10. Circuits are reproduced of the control pulse shaper, the amplifier, the

A study of the electrical ... 33152
S/120/61/000/006/021/041
E032/E514

frequency divider and the time selector. The device can be used to measure the working characteristics and the electrical strength recovery of discharge tubes switched at a repetition rate of up to 20 kc/sec at an average power of 1 kW. There are 9 figures and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc. The English-language reference reads as follows: Ref.1:G.D.McCann, J.J.Clark, Trans.AIEE, 1943, 62, 45.

ASSOCIATION: Gosudarstvennyy opticheskiy institut
(State Optical Institute)

SUBMITTED: April 24, 1961

Card 3/3

34209

S/057/62/032/002/010/022
B124/B102

26.2311

AUTHORS: Vanyukov, M. P., and Isayenko, V. I.

TITLE: Study of light emission from the electric explosion of thin wires

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 2, 1962, 197 - 201

TEXT: The development of the cloud of explosion products and of light emission in electric explosions of different wires was studied by using electron-optical devices. Current pulses were obtained by discharging a 20 μf capacitor bank which had been charged up to 10 kv. The inductance of the discharge circuit was 0.5 μh, and the steepness of current rise was $2 \cdot 10^{10}$ a/sec. It has been shown that the propagation rate of the front of explosion products increases with increasing diameter of the exploded wire and with a decrease of its length. Light emission originates in the narrow channel between the shock wave and the dense cloud of explosion products. The channel propagates to cover the whole surface of the explosion products. Gas and vapor temperatures behind the shock wave front

Card 1/3

Study of light emission ...

reach $4 \cdot 10^3$ °K and more, which leads to considerable ionization of the metal vapor giving rise to discharge. The time between the moment when the current passes through and that when the cloud begins to expand is proportional to the diameter of the wire and independent of its length. The time lag between the moment when the cloud begins to form and that when light emission starts increases with the wire length. Its dependence on the diameter is complex. At an explosion velocity of 2.5 to 3 km/sec, light emission sets in almost simultaneously with the explosion. Explosion of a wire takes place at a current density of about $5 \cdot 10^7$ a/cm^2 irrespective of its diameter. This value is in good agreement with previous results. Wires 0.1 to 0.2 mm in diameter exhibit a marked change in propagation velocity of the cylindrical shock wave at the moment when the glow covers the whole surface of the cloud of explosion products. As to the differences between the shapes of glow channels in spark discharge in air and in an explosion of a wire caused by current fluctuations in the discharge circuit, it has been concluded that, with the rapid increase of current from the second halfperiod onward, a shock wave is generated, which propagates either through the heated gas, or through the heated metal va-

Card 2/3

3536h
S/057/62/032/003/011/019
B111/B102

26.7311

AUTHORS: Yegorova, V. F., Isayenko, V. I., Mak, A. A., and Sadykova, A. I.

TITLE: Distribution of temperature and electron concentration in the channel of a spark discharge

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 3, 1962, 338 - 345

TEXT: Temperature distribution, plasma density, and widening rate of a spark channel were determined by measuring the intensity of its line spectrum (error 50%). With known temperature and intensity distribution of the radiation the electron concentration can be accurately determined by the given method. The measuring arrangement consisted of a monochromator, photomultiplier, and amplifier plus oscilloscope and of an electron-optical apparatus connected synchronously. The temperature in the spark channel was determined in He, air, and N_2 by three different methods: a) by measuring the absolute intensity of a spectral line, b) by measuring the intensity ratio of two spectral lines, c) by comparing the radial intensity dis-

Card 1/2

tribution I(r) in the channel and the temperature dependence I(T). If the ionization equilibrium in the plasma is known, the temperature can be calculated by successive approximation (maximum error of the three methods ±10 - ±15%). The electron concentration was calculated by the Kramers-Unsöld formula (Ref. 6: H. Maecker, T. Peters, Zs. Phys., 139. 448, 1954; F. Finkelnburg, T. Peters, Hand. d. Phys., 28, Berlin, 1957) (measurement error ± 10%). Results: 1) The distribtuion of temperature and electron concentration in the spark channel is uniform. 2) The temperatures determined by the three methods agree well. Differences are below measurement accuracy. This justifies assuming a Boltzmann distribution of the excited atoms and using the Saha formula for ionization. 3) The mean temperature in the channel agrees well with the value on its axis. 4) The difference in the values of electron concentration obtained by measuring the background on the one hand and the shift of the spectral lines on the other is not due to inhomogeneities but to shortcomings in the plasma radiation theory. The authors thank M. P. Vanyukov for discussing the results.
There are 6 figures, 1 table, and 11 references: 7 Soviet and 4 non-Soviet.

SUBMITTED: April 5, 1961 (initially) May 25, 1961 (after revision)
Card 2/2

S/057/62/032/003/017/019
B142/B102

AUTHORS: Vanyukov, M. P., Isayenko, V. I., and Travleyev, G. N.

TITLE: Discontinuities in the spark channel which develope at high repetition frequency of discharges

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 3, 1962, 373-374

TEXT: Irregularities occurring in high-frequency spark discharges in the spark channel were studied. The sparks were photographically examined in an ИШ-500 (ISSh-500) lamp filled with xenon of 4 atm. The discharges were filmed (running speed of film, 40 m/sec). The image scale was 1:1. The frequencies used were the limits at which the studied phenomena appeared. At f = 400 cps, the position of the spark channel between the electrodes is stable. The appearance of the channel is determined by shape and arrangement of the electrodes. At f = 2000 cps, the channel bends considerably and takes a different position with every discharge. With both frequencies, the mean power was approximately the same (130 watts at 400 cps, 160 watts at 2000 cps). Points of discontinuity appeared in the channel at 3 - 4 kcps. The channel seemed to be interrupted,

Card 1/2

individual points of intensive glow became visible. Several discharges may occur in one channel. The point of discharge may shift along the channel with every discharge (velocity of shift = 1-2 m/sec). Sometimes, the discharge zone broadens near the electrodes. An intense afterglow occurs in the discharge zone for 50-200 μsec. This afterglow is assumed to be caused by metal vapor (evaporation of electrodes) which has a much lower ionization potential than the other gas. The winding path of the spark is explained by clouds of heated gas which form in the channel and along the boundaries of which the spark runs. These local heatings cannot be eliminated between the individual discharges since high pressure gradients are missing, and convection is only sufficient to shift them. The discontinuities in the spark channel are explained by the fact that in gases of poor deionization capacity the current does not flow through the narrow channel but through a wider gas zone. Thus, the current density is lower in these sections and, with it, also the luminous intensity. In air, these phenomena were not observed, even with frequencies of up to 20 kc/sec. There are 3 figures and 1 Soviet reference.

SUBMITTED: June 14, 1961
Card 2/2

24.2120

S/057/62/032/006/016/022
B108/B102

AUTHORS: Vanyukov, M. P., Isayenko, V. I., and Travleyev, G. N.

TITLE: Recovery of the electrical strength of a spark gap in repeated discharges

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 6, 1962, 746 - 752

TEXT: The range in which the voltage of a spark discharge can be controlled and the limiting load of a spark gap were determined. The recovery of a gap as depending on the frequency at which the discharges follow was examined. It was found that in the first 10 - 15 μsec after the discharge has stopped the disruptive strength of the gap remains virtually unchanged (200 - 400 v). The disruptive voltage is only slightly dependent on the gap length. The subsequent stage of the process is the collapse of the channel sheath and becomes obvious in a rapid rise of the disruptive strength owing to the cooling of the gas. Strength in this stage increases at a rate of 50 - 120 v/μsec. The stage with low disruptive voltage is longer in xenon than in air. This is due to the greater mass of the xenon atoms, which sustain the channel after the end of the discharge for a

Card 1/2

longer time than in air. Extreme recovery rates (up to 125 v/μsec) at very high frequencies are due to a decrease in energy of each individual discharge and to inhomogeneities in the gap. At too high frequencies, the strength is either lost completely (continuous discharge) or causes an unstable operation. If the gas is blown through the gap the power per unit length of the channel can be increased considerably (up to 400 watt/cm). At high frequencies, however, blowing has no essential effect on recovery. This is obviously due to the fact that the gas at the moment of discharge is in a state of intense movement. There are 6 figures.

SUBMITTED: July 24, 1961

Card 2/2

VANYUKOV, M.P., kand. fiz.-matem.nauk; ISAYENKO, V.I., inzh.; TRAVLEYEV, G.N., inzh.

Regulation range and load limits of high-pressure stroboscopic pulse lamps. Svetotekhnika 9 no.8:20-23 Ag '63. (MIRA 16:8)

1. Gosudarstvennyy opticheskiy institut.
(Electric lamps)

ISAYENKO, V.I.

AID Nr. 984-3 6 June

TIME VARIATION OF SPECTRAL COMPOSITION OF Nd-DOPED GLASS LASER OUTPUT (USSR)

Vanyukov, M. P., V. I. Isayenko, and V. V. Lyubimov. Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 4, Apr 1963, 1151-1152

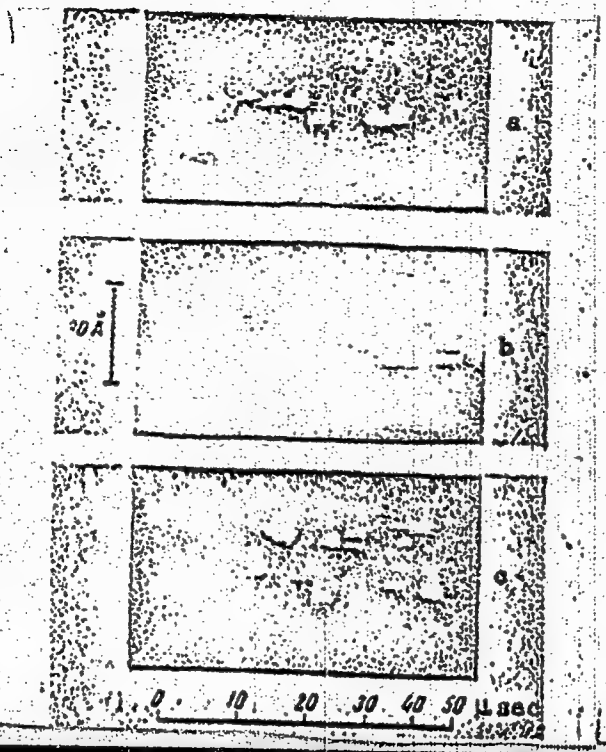
S/056/63/044/004/006/044

The variation of the spectral composition of the output of a neodymium-doped glass laser with time is investigated. A glass cylinder 60 mm long and 8 mm in diameter containing 2% Nd_2O_3 was used. A spectral dispersion of 14 A/mm was accomplished by a diffraction spectrograph, and the time variation was registered by an electron-optical converter. The time resolution was ~5 sec. The results, with superthreshold pumping powers of a) 20%, b) 40%, and c) 70%, are shown in the illustration. The simultaneous production of several lines with superthreshold pumping power is explained as due to the establishment of population inversion for several pairs of sublevels at the same time.

Card 1/2

AID Nr. 984-5 6 June

TIME VARIATION OF SPECTRAL COMPOSITION [Cont'd] S/056/63/044/004/006/044



Card 2/2

[BB]

L 10524-63 EWA(k)/EWT(1)/FBD/T-2/3W2/BDS/EEC(b)-2/ES(t)-2--AFFTC/ASD/ESD-3/RADC/APGC/AFWL--Pl-4/Po-4--JHB/WG/K/EH/IJP(C)

ACCESSION NR: AP3000040 S/0056/63/044/005/1493/1496

AUTHOR: Vanyukov, M.P.; Isayenko, V. I.; Serebryakov, V. A. 82 81

TITLE: Investigation of directivity of emission of an optical quantum generator

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 44, no. 5, 1963, 1493-1496

TOPIC TAGS: laser, emission direction, rod cross section, neodymium-doped glass

ABSTRACT: Neodymium-doped glass rods with cross sections of various shapes have been studied to determine the effect of the shape on the directional properties of laser emission. The polished ends of the samples received a dielectric coating. The samples were pumped by two pulsed lamps, and the emission was detected by an electron-optical image converter. The distribution of oscillation zones in the rod was photographed. The results show the stimulated emission from rods of square, rectangular, and octagonal cross section can be propagated in several discrete directions. The presence of these directions is

Card 1/2

L 10524-63
ACCESSION NR: AP3000040

attributed to the formation of additional closed paths of oscillator beams as a result of multiple reflections from parallel side walls. Emission from rods of circular cross section is propagated in only one principal direction, perpendicular to the end faces. Orig. art. has:6 figures.

ASSOCIATION: Gosudarstvennyy opticheskiy institut (State Institute of Optics)

SUBMITTED: 12Dec62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: PH, SD NO REF SOV: 001 OTHER: 001

mcs/CA
Card 2/2

L 10078-63 EWA(k)/EWT(l)/EWP(q)/FBD/EDS/T-2/3W2/EEC(b)-2/ES(t)-2--
AFFTC/ASD/ESD-3/RADC/APGC/AFWL/SSD--Pl-4/Po-4--GG/JHB/WH/WD/IJP(C)/K/EH
ACCESSION NR: AP3000594 S/0051/63/014/005/0734/0736

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Lyubimov, V. V. 86

TITLE: Time variation of the spectral composition of the emission of the ruby laser

SOURCE: Optika i spektroskopiya, v. 14, no. 5, 1963, 734-736

TOPIC TAGS: ruby laser emission, ruby laser spectrum

TEXT: Time-sequence photographs of the emission line spectrum of the ruby laser have been obtained. The spectral lines were separated by a Fabry-Perot interferometer and detected by an electron-optical image converter. Various ruby samples were used in the laser, and the interferometer base was varied from 4 to 25 mm. The pumping energy of the laser was also varied. Photographs show that the energy of the laser pulse can consist of one, two, or three lines and that emission wavelength can vary from

Card 1/2

L 10078-63
ACCESSION NR: AP3000594

pulse to pulse within an interval of 0.2 Angstrom, with no apparent regularity. The results coincide with those obtained by Hughes and by McMurtry and Siegman. Orig. art. has: 3 figures.

ASSOCIATION: none

SUBMITTED: 20Oct62 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: 00 NO REF SOV: 000 OTHER: 005

bm/
Card 2/2

L 5?1?1-65 EEC(b)-2/EWT(m)/EWC(k)-2/EWA(h)/EWA(k)/EWP(k)/EWT(l)/EWT(m)/EAD/EW[illegible]

ACCESSION NR: AP5[illegible] /EWG UR/0058/65/000/006/H008/H009

SOURCE: Ref. zh. Fizika, Abs. 6Zh58

AUTHORS: Vanyukov, M. P.; Isayenko, V. I.; Serebryakov, V. A.; Stepanov, B. I.

TITLE: Noise density in a neodymium glass laser

CITED SOURCE: Zh. prikl. spektroskopii, v. 1, no. 2, 1964, 141-147

TOPIC TAGS: laser, neodymium glass laser, noise density, laser power, laser operation

TRANSLATION: The authors investigated the dependence of the laser generation power on the mirror reflection coefficient and on the pump power. An analysis of the results has made it possible to estimate the influence of the noise on the generation power. It is shown that the noise density u_n is connected with the pump radiation density in the following fashion

$$u_n = a + bB(u_{pump} - u_{thr})$$

where a and b are constants that depend on the dimensions of the rod and of the side surfaces; u_{thr} is the threshold pump density. A cylindrical rod of neodymium glass with length l = 14 cm and diameter d = 1.5 cm was investigated. One of the

Card 1/2

L 59191-65
ACCESSION NR: AR5017554

mirrors was dense, with a transmission coefficient T = 5%. The output mirror was interchangeable and could have transmission coefficients 9, 19, 40, 48, 60, and 79%. The authors investigated the dependence of different laser parameters on the value of the useful losses connected with the different transmission coefficients of the output mirror. Such parameters were: the lasing time, the time interval between the turning on of the pump lamp and the start of lasing, the lasing flux [illegible], the beam density [illegible]. It is noted that the magnitude of the noise in [illegible] of laser generators is quite large, and no accurate description of the generation processes can be obtained without account of the noise.
A. Grasyuk

SUB CODE: EC ENCL: 00

Card 2/2

L 12143-65 EWA(k)/EWT(l)/EEC(k)-2/T/EEC(b)-2/EWP(k)/EWA(m)-2 Pc-4/Pf-4/
ACCESSION NR: AP5000558 Pl-4/Pl-4 IJP(c)/ S/0051/64/017/006/0954/0956
RAEM(a) WG/JHB

AUTHOR: Vanyukov, M. P.; Issayenko, V. I.; Serebryakov, V. A.

TITLE: Experimental verification of the Stepanov formula for the yield of stimulated emission from a resonator

SOURCE: Optika i spektroskopiya, v. 17, no. 6, 1964, 954-956

TOPIC TAGS: laser emission, light yield, laser resonator, laser output analysis

ABSTRACT: A formula derived by B. I. Stepanov (DAN SSSR v. 148, 74, 1963) for the yield of stimulated emission from a resonator, in case of samples operating in the stationary generation mode, was checked experimentally. The objects of the investigation were cylindrical samples of glass activated with neodymium, operating at room temperature. The sample was placed in a resonator with external dielectric-coating mirrors. One mirror was permanent and had a transmission coefficient 0.5%, while the output mirror was interchangeable and had a transmission coefficient 10 to 80%. The experiments were made with samples 140 and 370 mm long. To eliminate differences in the

Card 1/2

properties of the samples, the short sample was made from the long sample after the experiments with the latter were completed. The light energy of each flash was registered with a calorimeter accurate to 10%. Each flash lasted 0.8 -- 1.0 msec and consisted of a large number of individual spikes. The results show that in order to compare the experimental data with the Stepanov formula it is necessary to take into account the average duration of the radiation pulse and to suitably modify the theoretical curves to yield the time dependence of the averaged values of the light flux. Further tests in checking the parameters of the Stepanov formula are being planned. Orig. art. has: 2 figures and 6 formulas.

ASSOCIATION: None

SUBMITTED: 18Apr64

ENCL: 00

SUB CODE: OP, EC NR REF SOV: 004

OTHER: 000

ACCESSION NO. AP4031135 S/0056/64/046/004/1182/1187

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Serebryakov, V. A.

TITLE: Time variation of the intensity of stimulated radiation in various lateral modes

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 4, 1964, 1182-1187

TOPIC TAGS: stimulated radiation, radiation intensity, radiation intensity variation, lateral radiation mode, radiation intensity time variation, axial radiation mode, lateral mode generation, axial mode generation, stimulated radiation, neodymium activated glass, activated glass, resonator, polarized radiation

ABSTRACT: Spatial and time relationships between the axial and some lateral modes of stimulated radiation were investigated by using an apparatus in which the emission from a neodymium glass (λ = 1.06 μ) is directed toward a lens in the focal plane of which is the photocathode of an image converter. The optical system with its auxiliary photographic system is shown in Fig. 1 of the Enclosure for a case

Card 1/2

ACCESSION NO. AP4031135

wherein the emission leaving the glass specimen is separated into two beams. Fig. 2 shows the distribution of various oscillation modes. A comparison of the data obtained with determinations made by an analytical formula connecting the wave number of a vector with the linear-resonator dimensions shows that the theory of resonators does not explain all the data obtained. However, the importance of polarized radiation in the lateral modes is emphasized. Original art. has: 5 figures and 4 formulas.

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova (State Institute of Optics)

SUBMITTED: 31Aug61 DATE ACQ: 07May64 ENCL: 02

SUB CODE: PH NO. REF. SOV: 002 OTHER: 003

Card 2/2

L 20191-65 EWG(j)/EWA(k)/FSD/EWT(1)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(h)/EWA(m)-2 Pr-4/Pe-5/Pf-4/Peb/Pi-4/Pl-4 IJP(c)/SSD/BSD/AFWL/ASD(a)-5/ASD(t)/AFETR/ASD(p)/AEM(a)/ESD(gs)/ESD(t) MG

ACCESSION NR: AP5001819 S/0056/64/047/006/2019/2021

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Serebryakov, V. A. 8

TITLE: Stimulated radiation connected with complex oscillation modes

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 6, 1964, 2019-2021

TOPIC TAGS: laser, laser crystal, laser oscillation mode, laser complex mode 25

ABSTRACT: Proceeding from earlier works by R. A. Laff, W. P. Dumke, and others (IBM J. Res. and Developm. 7, 1963, 63) and of R. J. Collins and J. A. Giordmaine (Proc. 3rd Intern. Congress on Quantum Electronics, Dunod, Paris, 1964, 1239), the authors continue their own investigations of the problem of lateral oscillation modes in laser crystals. The article deals with an experimental study of complex oscillation modes having an angular distribution of radiation not studied previously. The radiation of a neodymium-activated glass sample was photographed through an electron-optical transducer. Photographs of the end faces of samples with square and rectangular cross sections were

Card 1/2

L 20291-65
ACCESSION NR: AP5001819

made, and the geometry of a typical light path within the rectangular specimen was analyzed in a drawing. The formation of complex modes is attributed to the formation of closed radiation paths within the specimens, each of which has its own plane and pattern of multiple reflections from the several pairs of parallel walls. The planes of the paths are perpendicular to the end faces. The points of emergence of the rays from the end faces form symmetrical patterns relative to the center line of the specimen. Theauthors propose that the relative nonparallelism (1 to 3') of the side walls of the specimen is responsible for the limited number of paths. Orig. art. has: 3 figures.

ASSOCIATION: Opticheskiy institut im. S. I. Vavilova (Optical Institute)

SUBMITTED: 16Jan64 ENCL: 00 SUB CODE: EC

NO REF SOV: 002 OTHER: 002 ATD PRESS: 3162

Card 2/2

L 2[illegible]947-65 EWG(j)/EWA(k)/FBD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/EEC(t)/T/EWP(t)/EEC(b)-2/EWP(k)/EWP(b)/EWA(m)-2/EWA(h) Pf-4/Pi-4/Pl-4/Pn-4/Po-4/Pa-4/Peb
IJP(c) JHB/WH/WG/JD/JG
ACCESSION NR: AP5004365 S/0056/65/048/001/0003/0006

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Luizova, L. A.; Shorokhov, O. A.

TITLE: Excitation of additional nonaxial modes of stimulated emission

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 1, 1965, 3-6

TOPIC TAGS: nonaxial mode, mode excitation, ruby laser

ABSTRACT: Data are presented on the excitation of nonaxial radiation due to inclination of the lasing material with respect to the resonator axis. The specimens consisted of neodymium-doped glass rods, 8 or 10 mm in diameter and 67 or 120 mm long, with polished ends. These were placed in a resonator (at various angles to its axis) with plane, dielectric-coated external mirrors. The coefficients of reflection of the latter were 80% and 98.5% and their surfaces, set 1 or 1.5 m apart, were polished with an accuracy up to 0.1 λ. The deviation of emitted radiation from the axial path, due to the optical inhomogeneities of the specimens, did not exceed 0.1—0.5 λ. The

Card 1/2

L 26947-65

ACCESSION NR: AP5004365

specimens were pumped at 1.5 times the threshold energy. Experimental results indicate that for a well-aligned specimen the emission is in the axial direction with a divergence of 1—1.5°. At angles from 40' to 2°, in addition to the central spot, two additional spots appear on each side in the inclined plane of the specimen. The angle between the additional spots is independent of the specimen size, pumping energy, and the angle of misalignment. The appearance of additional spots is due to the same mechanism which is responsible for the formation of Fabry-Perot rings in a well-aligned resonator. The complex type of mode in a non-ideal resonator can be considered, in both cases, as a combination of the axial and non-axial modes in an ideal resonator. Orig. art. has: 3 figures. [YK]

ASSOCIATION: Gosudarstvennyy opticheskiy institut im. S. I. Vavilova (State Opitcal Institute)

SUBMITTED: 06Feb64 ENCL: 00 SUB CODE: EC

NO REF SOV: 001 OTHER: 004 ATD PRESS: 3189

Card 2/2

L 63362-65 EWA(k)/FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/EWP(i)/T/EWP(k)/EWP(b)/
EWA(m)-2/EWA(h) SCTB/IJP(c) WG/WH

ACCESSION NR: AP5019765

UR/0051/65/019/002/0286/0287
621.375.9:535

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Kalinin, V. P.; Lyubimov, V. V. 44

TITLE: Effect of mirror misalignment of a Fabry-Perot resonator on the resonator loss

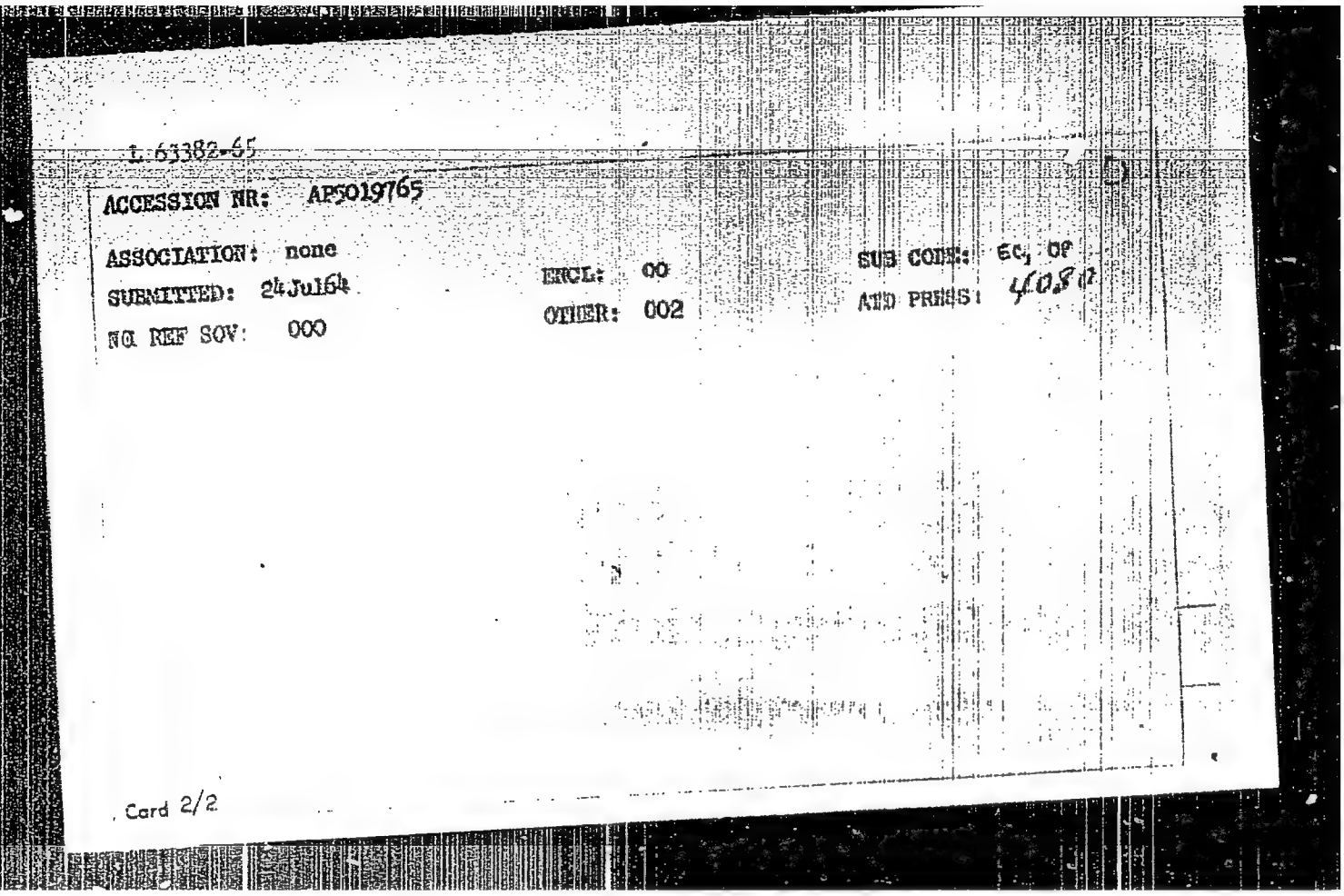
SOURCE: Optika i spektroskopiya, v. 19, no. 2, 1965, 286-287

TOPIC TAGS: solid state laser, neodymium laser, Fabry Perot resonator, resonator loss, laser optics

ABSTRACT: Data are presented on the loss arising in a laser resonator when the mirror tilt angle is relatively large (1—2'). The tests were made on a neodymium-glass laser with bleached ends, using rods of various diameters and lengths. The loss was determined by comparing the dependence of the threshold pump energy on the mirror misalignment and on the mirror reflection coefficient. The results are presented in the form of plots of $\log(1-\rho)$ vs α (ρ = relative loss, α = tilt angle), so that the resultant curves are straight lines. An empirical formula $-\log(1-\rho) = 10^{-2}\alpha^{0.42}l$ (l = length of rod in meters) is derived on the basis of the results. The results show also that at certain rod orientations the inhomogeneities in the rod cancel out in part the effect of the misalignment. Orig. art. has: 2 figures and 1 formula.

[02]

Card 1/2



L 63382-65

ACCESSION NR: AP5019765

ASSOCIATION: none

SUBMITTED: 24Jul64 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 000 OTHER: 002 ATD PRESS: 4080

Card 2/2

EWG(t)/FBD/EWP(i)/EWP(b)/T/EWA(m)-2/EWP(e) Pr-4/Pl-4/Pl-4/Pm-4/Pn-4/Pq-4/Pab SCTB/IJP(c) WG/WH

ACCESSION NR: AP5013854 UR/0368/65/002/004/0295/0298

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Luizova, L. A.; Shorokhov, O. A.

TITLE: Thermal distortion in glass specimens producing stimulated emission

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 4, 1965, 295-298

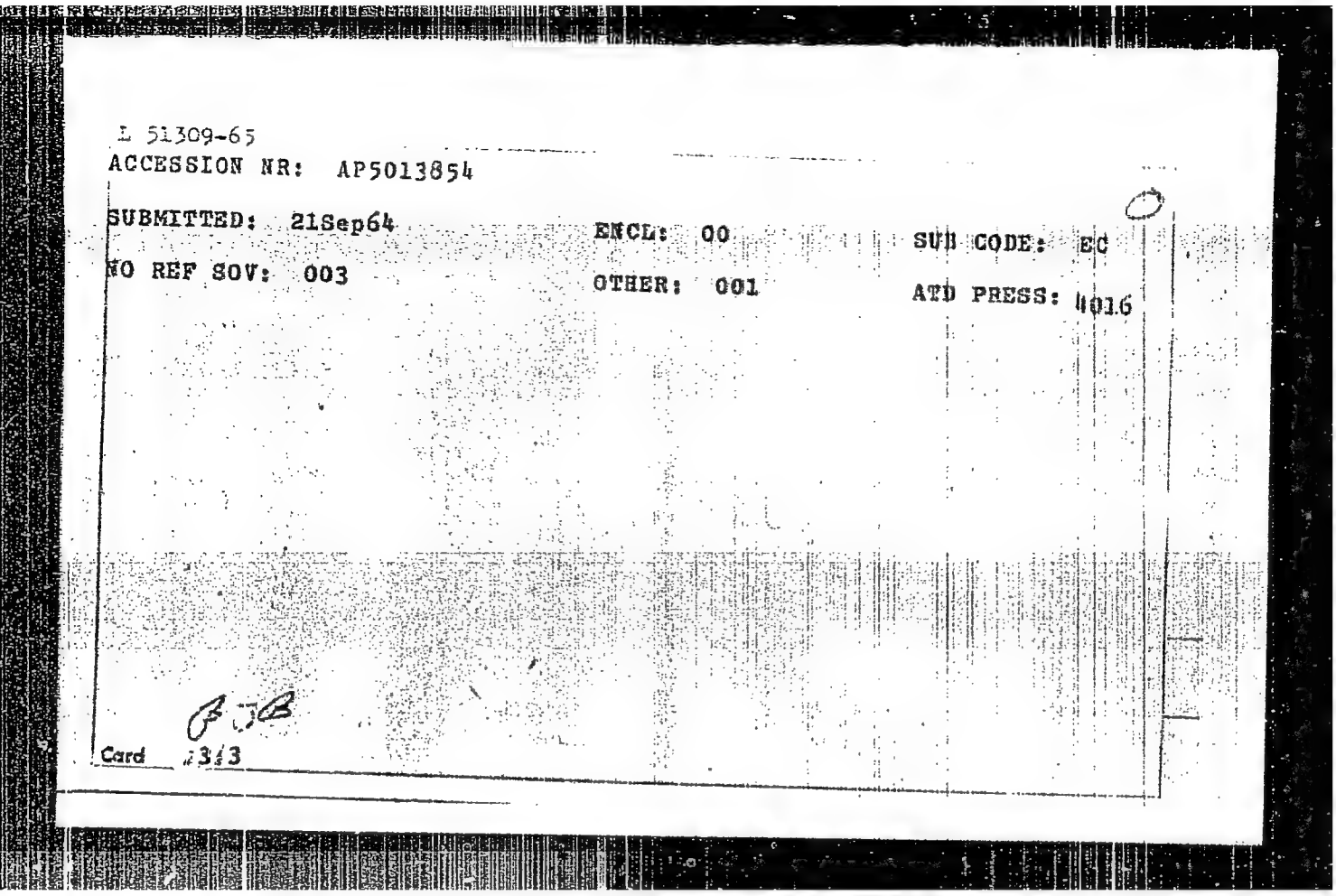
TOPIC TAGS: laser, glass laser, neodymium glass laser, laser distortion, beam divergence, thermal distortion, water cooled laser

ABSTRACT: Inhomogeneities created during the flash pulse of the pump lamps in neodymium laser glass were investigated in relation to their effect upon the output beam divergence. A Mach-Zender interferometer was used as the basic comparator between pumped and unpumped glass. Rods up to 1 cm in diameter were placed in elliptic reflectors with straight flash lamps. Larger rods were equipped with complex units incorporating four straight flash lamps and elliptic reflectors allowing for the large variations in pumping conditions brought about by filling the space between the rod and the lamps with water. Inter-

Card 1/3

ference photographs show thermal distortion of the rods at intervals ranging from 400 μsec to 5 minutes after the start of the pumping pulse. If the nature of the thermal distortion indicates that the rod heats up more in the center than near its periphery, it is considered the equivalent of a positive lens, and vice versa. For air-cooled rods, a 200—250 joule/cm^3 pumping density resulted in a center-edge path difference of one wavelength per 10 cm of rod length. The distortion produced a positive lens. For watercooled rods, a negative lens was produced. Generation begun 400 μsec after the start of the pumping pulse in a rod 8 mm in diameter was accompanied by a divergence angle of 1'; toward the end of generation, the angle reached 2'. A rod 2 cm in diameter increased the divergence angle from 40 to 80". Distortion due to the action of flash lamps upon the air in this interferometer was found to be much larger than that occurring directly in the laser rod. The air heating distortion, however, was practically eliminated by ordinary glass shielding tubes inserted on the ends of the rod. Orig. art. has: 4 figures. [BK]

ASSOCIATION: none



L 51309-65
ACCESSION NR: AP5013854

SUBMITTED: 21Sep64 ENCL: 00 SUB CODE: EC

NO REF SOV: 003 OTHER: 001 ATD PRESS: 4016

Card 1/3

VANYUKOV, M.P.; ISAYENKO, V.I.; KALININ, V.P.; LYUBIMOV, V.V.

Effect of the misalignment of mirrors in a Fabry-Perot resonator on latter's losses. Opt. i spektr. 19 no.2:286-287 Ag '65.
(MIRA 18:8)

L 1730-66 EWP(e)/EWT(m)/EPF(c)/EWP(i)/EWP(t)/EWP(b) IJP(c) JD/WH

ACCESSION NR: AP5016044 UR/0368/65/002/005/0415/0417
621.378.329

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Luizova, L. A.; Shorokhov, O. A.

TITLE: Effect of resonator mirror alignment on generation conditions in neodymium-activated glass

SOURCE: Zhurnal prikladnoy spektroskopii, v. 2, no. 5, 1965, 415-417

TOPIC TAGS: laser optics, neodymium laser, glass laser, mirror alignment

ABSTRACT: The effect of resonator mirror alignment on energy, emission threshold, angular distribution, end distribution, and coherence in specimens of neodymium-activated glass was investigated. Glass specimens 8,10, and 15 mm in diameter and 67–120 mm long were placed in the resonator with 90% reflective dielectric-coated mirrors set 1 m apart. The maximum energy output from the laser was 2-3 joules. It was found that misalignment of one of the external mirrors reduced the emitted energy, and increased the emission threshold while the pumping energy remained constant. For misalignment of less than 15", there was no change in angular distribution within the experimental error. At greater misalignment, the angular dis-

Card 1/2

L 1730-66

ACCESSION NR: AP5016044

tribution becomes asymmetric. Strong pumping produces even illumination over the entire end of a neodymium rod when alignment is perfect. When misalignment reaches 20-30", bands appear which coincide with the axis of rotation of the mirror. The interference pattern was not disturbed by misalignment, which indicates that coherence is preserved. Orig. art. has: 4 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 21Sep64 ENCL: 00 SUB CODE: EC, OP

NO REF SOV: 000 OTHER: 003

Card 2/2

VANYUKOV, M.P.; ISAYENKO, V.I.; LYUBIMOV, V.V.

Polarized stimulated radiation from glass activated by neodymium.
Zhur. prikl. spekt. 3 no.2 Ag '65. (MIRA 18:12)

1. Submitted January 12, 1965.

VANYUKOV, M.P.; ISAYENKO, V.I.; LUIZOVA, L.A.; SHOROKHOV, O.A.

Thermal distortions in samples of glass generating stimulated radiation. Zhur. prikl. spekt. 2 no.4:295-298 Ap '65.
(MIRA 18:8)

L 1381-66 EWP(e)/EWT(m)/EWP(i)/EWP(t)/EWP(b) IJP(c) JD/JG/WH

ACCESSION NR: AP5021491 UR/0368/65/003/002/0171/0172
535.89

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Lyubimov, V. V.

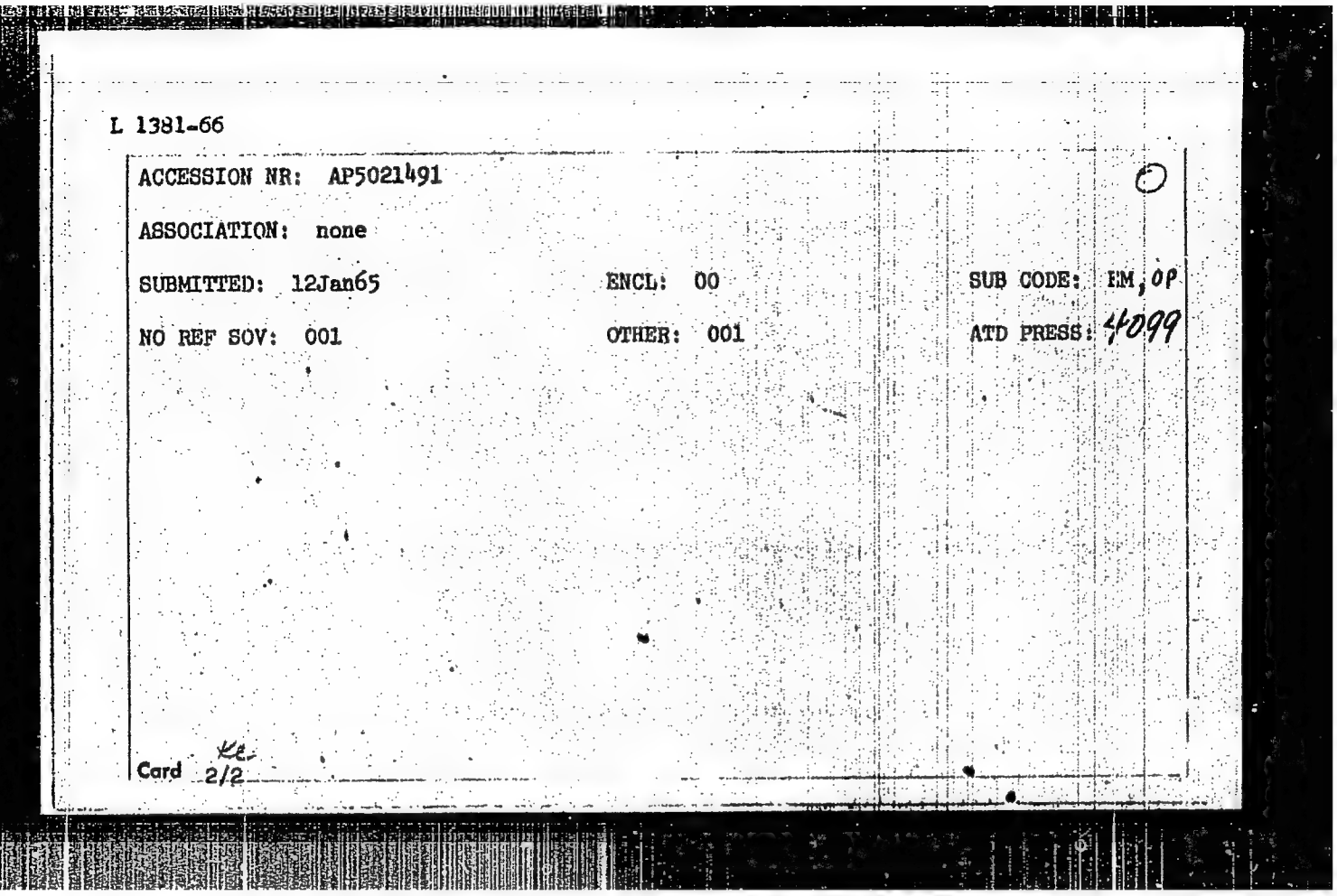
TITLE: Polarization of the stimulated radiation of neodymium-activated glass

SOURCE: Zhurnal prikladnoy spektroskopii, v. 3, no. 2, 1965, 171-172

TOPIC TAGS: light polarization, polarized light, polarization, stimulated radiation, resonator, laser, neodymium doped glass, glass, neodymium

ABSTRACT: The high losses caused by the polarizer can be avoided by using instead a glass plate whose angle to the axis of the instrument can be varied. The glass plate, which is placed between the neodymium glass rod and the output window, affects the efficiency of the resonator by determining the polarization plane of light oscillations. During experiments, the emerging beam was split by a half-transparent mirror, and the intensity of the two components was compared on a two-channel oscillograph. The measurements showed that if the glass plate is inclined at a small angle to the axis of the resonator, an almost complete polarization of the stimulated radiation can be obtained without involving great losses of energy. Orig. art. has: 2 figures. [ZL]

Card 1/2



L 1381-66

ACCESSION NR: AP5021491

ASSOCIATION: none

SUBMITTED: 12Jan65 ENCL: 00 SUB CODE: EM, OP

NO REF SOV: 001 OTHER: 001 ATD PRESS: 4099

Card 2/2

L 11068-66 EWT(1)/EWA(m)-2 IJP(c) AT

ACC NR: AT6001394 SOURCE CODE: UR/3180/64/009/000/0116/0120

AUTHOR: Vanyukov, M. P. (Candidate of physico-mathematical sciences); Isayenko, V. I.; Lyubimov, V. V.

ORG: none

27
B+1

TITLE: Spatial instability of the luminous element of high-pressure pulse lamps operating under repeated flash conditions

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 116-120

TOPIC TAGS: flash lamp, spark gap, electric discharge

ABSTRACT: A photoelectric method (21) was developed for measuring the probability distribution of the position of spark discharge channels (20) in space when the gap is cut in under repeated discharge conditions. The spatial distribution of the channels depends on the shape of the electrodes. The width of the distribution is 0.35 mm for conical electrodes and increases to 1-2 mm for electrodes in the shape of a hemisphere or frustum of a cone. The widths of channel distribution in ISSh-type high-pressure pulse lamps range from 0.5 to 1.5 mm. Methods are described for improving the spatial stability of the channel by introducing two auxiliary electrodes into the

Card 1/2

L 11068-66

ACC NR: AT6001394

spark gap when the gap is flushed with a stream of gas having a low breakdown capacity and when a surface discharge on a ceramic surface is used. Orig. art. has: 6 figures, 1 table.

SUB CODE: 20,13 SUBM DATE: 00/ ORIG REF: 000/ OTH REF: 002

Card 2/2

L 11367-65 EWT(1) UJP(c) WW/GG

ACC NR: AT6001395 SOURCE CODE: UR/3180/64/009/000/0121/0125

AUTHOR: Vanyukov, M. P. (Candidate of physico-mathematical sciences); Isayenko, V. I.; Travleyev, G. N.

ORG: none

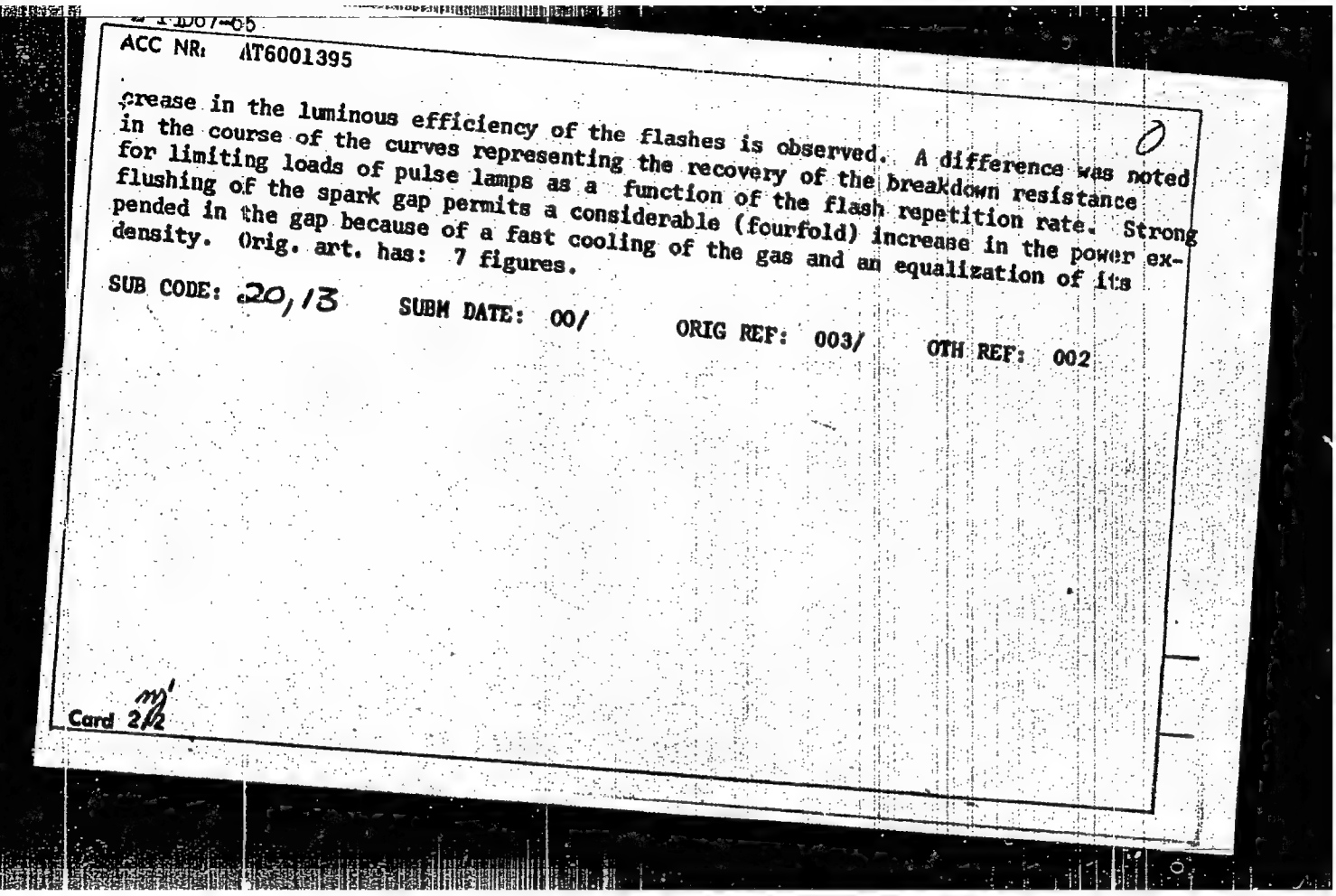
TITLE: Limiting loads of pulse lamps operating under repeated flash conditions

SOURCE: AN SSSR. Komissiya po nauchno fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 121-125

TOPIC TAGS: light pulse, spark gap, flash lamp, electric discharge

ABSTRACT: The article deals with the recovery of the breakdown resistance of a spark gap operating under conditions of repeated flashes with a limiting load at a discharge repetition rate of up to 20 kc. In operation with a given flash repetition rate, the limiting power of a pulse lamp can be raised by increasing the capacitance of the working capacitor. When the discharge repetition rate is increased, the power expended in the lamp is determined by two opposite factors: a drop in the energy of the individual flash as a result of the decrease in the breakdown voltage, and an increase in the total number of flashes. For every regime of the discharge circuit, there exists a frequency after the attainment of which the average power dissipated in the lamp becomes limited. At high discharge repetition rates in the air spark gap, a de-

Card 1/2



L 1007-65
ACC NR: AT6001395

crease in the luminous efficiency of the flashes is observed. A difference was noted in the course of the curves representing the recovery of the breakdown resistance for limiting loads of pulse lamps as a function of the flash repetition rate. Strong flushing of the spark gap permits a considerable (fourfold) increase in the power expended in the gap because of a fast cooling of the gas and an equalization of its density. Orig. art. has: 7 figures.

SUB CODE: 20,13 SUBM DATE: 00/ ORIG REF: 003/ OTH REF: 002

Card 2/2

L 20618-66 FBD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/ETC(f)/EPF(n)-2/EWG(m)/T/EWP(k)/
ACC NR: AP6012184 EWA(h) IJP(c) SOURCE CODE: UR/0386/66/003/008/0316/0318
WG/AT/WH

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Lyubimov, V. V.; Serebryakov, V. A.; Shorokhov, O. A.

ORG: none

TITLE: Use of a laser operating in the spike mode to obtain a high-temperature plasma

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 8, 1966, 316-318

TOPIC TAGS: laser application, laser pulsation, neodymium glass, high temperature plasma, discharge plasma, gas ionization

ABSTRACT: Since the use of a laser for gas ionization or production of a high-temperature plasma is usually limited to light pulses of duration 10^{-7}—10^{-8} sec, and for certain applications, say to accelerate chemical reactions, it may be of interest to obtain longer action of the electromagnetic field of the light wave on the plasma, the authors have experimented with ionization of air with the aid of radiation from a laser operating in the spike mode, with total generation duration of about one millisecond. The neodymium-glass laser used in the investigation yielded light pulses with energy 800—1400 J. Neodymium-glass rods of 45 mm diam-

Card 1/2

L 20618-66
ACC NR: AP6012184

eter and 600 mm long were used, with 2 and 4 per cent concentration of Nd_2O_3. An elliptic illuminator with six conjugate ellipses and straight pump flash lamps was used. The average laser radiation power, at a flash duration 0.8—1.2 msec, was 1—2 Mw, but, taking into account the off-duty factor between spikes, the maximum radiation power could reach 10—30 Mw. When this radiation was focused in air with a 100 mm focus lens a power density 1—3 Gw/cm^2 and a field intensity of the order of 10^7 v/cm were obtained, enough to produce a high-temperature plasma in air. Photographs show that the plasma produced by the gas breakdown is optically opaque and that the laser emission of 1.06 μ wavelength is absorbed in the thin front layer of the cloud. Orig. art. has: 1 figure. [02]

SUB CODE: 20/ SUBM DATE: 24Feb66/ ORIG REF: 001/ OTH REF: 001
ATD PRESS: 4225

Card 2/2 BK

L 23409-66 EWD/EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k)/EWA(h) IJP(c) NG/WW
ACC NR: AP6011652 SOURCE CODE: UR/0020/66/167/003/0547/0548

AUTHOR: Vanyukov, M. P.; Dmitriyevskiy, O. D.; Isayenko, V. I.; Serebryakov, V. A.

ORG: none

TITLE: Fast-operating liquid Q-switch shutter for neodymium glass laser

SOURCE: AN SSSR. Doklady, v. 167, no. 3, 1966, 547-548

TOPIC TAGS: laser Q switch, solid state laser, neodymium glass laser

ABSTRACT: An investigation was made of the use of 3,3'-diethyl-9,11,15,17-dineopentylenethiapentacarbocyanine iodide dye as a fast-operating shutter in a glass laser with a trivalent neodymium ion as activator. The emission falls on the longwave edge of the absorption band of the dye, whose maximum is at 980 mμ. A neodymium glass rod 15 mm in diameter and 240 mm in length was used. The dye in a plane-parallel cuvette 20 mm long, was placed inside the resonator, which had external mirrors spaced at 1 m. The cuvette was situated between the generating rod and the exit mirror. The giant pulse energy was 1.5 joule, and the duration of the pulse did not exceed 25—30 x 10^{-9} sec. The laser spectrum in transition to a single mode narrowed from 50 to 6—8 Å. Both the threshold of giant pulse generation and its energy depended on the optical density of the solution. The single pulse generation appeared when the concentration of the solution was larger than 4 x 10^{-5} mol/l. At lower concentrations, free generation was observed. The energy of the single pulse

Card 1/2 UDC: 621.378.325

L 23409-66
ACC NR: AP6011652

0

increased with the concentration up to some value of concentration after which the increase of energy leveled off. It was found that the value of optimum transmission coefficient for the free generation mode, for the generation of several pulses (solution concentration 3.3×10^{-5} mol/l), and for the generation of single pulses (concentration 11×10^{-5} mol/l) was approximately the same. Orig. art. has: 3 figures [JA]

SUB CODE: 20/ SUBM DATE: 14Jun65/ ORIG REF: 005/ OTH REF: 002/ ATD PRESS: 4234

Card 2/2 dda

L 29565-66 EEC(k)-2/EWP(k)/EWT(1)/EWT(m)/FBD/T/EWP(e) IJP(c) WH/WG

ACC NR: AP6018895 SOURCE CODE: UR/0237/66/000/006/0046/0046

AUTHOR: Vanyukov, M. P.; Venchikov, V. A.; Zhulay, V. Ya.; Isayenko, V. I.; Lyubimov, V. V. 56 B

ORG: none

TITLE: Two-channel single-pulse laser with an energy of 180 joules 25

SOURCE: Optiko mekhanicheskaya promyshlennost', no. 6, 1966, 46

TOPIC TAGS: solid state laser, laser emission, neodymium glass

ABSTRACT: An investigation was made of a laser in which high emission energy of the light pulse was obtained by the use of neodymium glass rods. Cylindrical specimens of glass (45 mm in diameter and 250 mm long) activated with neodymium were connected in series-parallel. Each specimen was optically pumped by six direct pulse lamps placed in a multielliptical illuminator. The laser consisted of two identical channels, each containing three rods assembled on one axis. Q-modulation was done by two prisms fixed on a common shaft rotating at 18,000 rpm. The light diameter of the prism (30 mm) was coordinated with the light diameter of the operating rod by means of a Galileian tube. The experiments showed that for effective pumping of an operating body 45 mm in diameter the content of Nd_2O_3 should not exceed 4%. In this way it is possible to obtain an amplification coefficient of one rod equal to 3 and provide a yield energy of 25—30 joules from one specimen. Connecting the rods

Card 1/2 UDC: 621.378.324:621.376

L 34850-66 FBD/EWT(l)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k) IJP(c) WG/WH

ACC NR: AP6018438 SOURCE CODE: UR/0051/66/020/006/0963/0969

AUTHOR: Vanyukov, M. P.; Isayenko, V. I.; Luizova, L. A.; Shorokhov, O. A. 50 B

ORG: none

TITLE: Losses in a resonator when the stimulated emission spectrum of Nd^{3+} in glass is narrowed

SOURCE: Optika i spektroskopiya, v. 20, no. 6, 1966, 963-969

TOPIC TAGS: laser emission, emission spectrum, neodymium, interferometer, RESONATOR, LINE NARROWING

ABSTRACT: The results of a study of the losses introduced by a Fabry-Perot interferometer to the intensity of the stimulated emission of a neodymium glass laser are presented. The spectral emission band is narrowed by introducing a selective system, in the form of a interferometer, into the resonator. The experimental equipment is illustrated and described in detail. The results indicate that the emission spectrum is significantly narrowed as the coefficient of reflection of the plate is increased (1 to 2 Å at 60 to 80% reflectivity). When the coefficient of reflection is low, the energy generated is 70% that obtained without selection and remains so until reflection reaches 80%, whereupon it drops rapidly. Losses due to various instrument components are described and their respective magnitudes estimated. Orig. art. has: 3 formulas, 6 figures. [14]

SUB CODE: 20/ SUBM DATE: 20Mar65/ ORIG REF: 006/ OTH REF: 004

ATD PRESS: 5131

Card 1/1 VV UDC: 621.375.9:535(206.1)

L 42940-66 EWT(1)/EWP(e)/EWT(m)/SEC(k)-2/T/EWP(k) IJP(c) WG/WH

ACC NR: AP6030175 SOURCE CODE: UR/0237/66/000/008/0001/0004

AUTHOR: Azin, V. A.; Vanyukov, M. P.; Isayenko, V. I.; Serebryakov, V. A.; Shorokhov, O. A.

ORG: none

TITLE: An Nd-glass laser with a smooth displacement of the spectral emission band

SOURCE: Optiko-mekhanicheskaya promyshlennost', no. 8, 1966, 1-4

TOPIC TAGS: solid state laser, neodymium laser, glass laser, laser output, laser efficiency

ABSTRACT: Piecewise continuous narrowing of the emission spectrum of a Q-switched Nd-glass laser at 0.2—0.3 nm was achieved experimentally without appreciable loss of efficiency by inserting the Fabry-Perot etalon inside the resonant cavity. The experimental setup is shown in Fig. 1. The KGSS-7 neodymium-glass rod used was 240 mm long and 15 mm in diameter. A rotating prism (30 x 10^3 rpm) Q-switch and a 1-m resonator produced a 3-j single pulse with a duration of ~40 nanosec. The spectral separation was achieved by means of an F-P etalon whose mirrors were 95% reflective. Another F-P etalon with 40% reflectivity and inclined at an angle ψ to the resonator axis was used as a spectral selector. The output mirror was either an F-P etalon with non-coated quartz plates (13% reflective) or a dielectric mirror. The variation of the spectral emission band and energy of a single-pulse laser as a function of ψ were

Card 1/3 UDC: 621.378.325

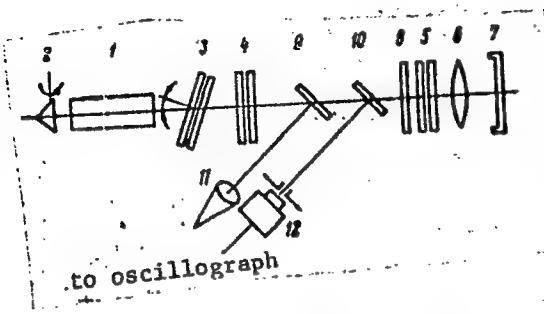


Fig. 1. Experimental setup

1 - Neodymium glass rod; 2 - prism; 3 - F-P etalon with reflection coefficient R = 40%; 4 - F-P etalon without reflective coating (in some experiments a dielectric mirror (R = 13%) was substituted); 5 - spectral separator F-P etalon with R = 95%; 6 - objective; 7 - camera; 8 - dull plate and neutral filters; 9, 10 - light separating plates; 11 - calorimeter; 12 - photocell.

shown graphically. Emission spectra of a single laser pulse for various ψ (120', 240', and 300') and the smooth displacement of the emission band in the free generation mode are shown. The experimental data indicate the following: 1) spectral narrowing to 0.2—0.3 nm occurred without a loss in the single pulse laser efficiency when an F-P etalon with uncoated plates was used as an output mirror; 2) simultaneous use of two etalons makes it possible to narrow the emission spectrum of a single pulse laser down to 0.01 nm; 3) use of an F-P etalon with coated plates inside the resonant cavity ensures smooth displacement of the spectral band within the 5—7 nm

L 42940-66
ACC NR: AP6030175

range for both free and Q-switched generation; 4) when the spectral band is displaced, the energy of a single pulse laser goes through several maxima which are spaced by a distance $\Delta\lambda$ equal to the resonator constant. Orig. art. has: 5 figures. [YK]

SUB CODE: 20/ SUBM DATE: 08Jan66/ ORIG REF: 001/ OTH REF: 004/ ATD PRESS: 5069

Card 3/3 MLP

ACC NR: AP7002725 SOURCE CODE: UR/0237/66/000/012/0065/0065

AUTHOR: Vanyukov, M. P. (Doctor of sciences); Venchikov, V. A.; Isayenko, V. I.; Serebryakov, V. A.

ORG: none

TITLE: A 6-Gw neodymium glass laser

SOURCE: Optiko-mekhanicheskaya promyshlennost', no. 12, 1966, 65

TOPIC TAGS: solid state laser, neodymium glass laser, giant pulse laser, Q switching, passive switching, polymethine dye chemical

ABSTRACT: A 6-Gw neodymium glass laser with a simple phototropic Q-switch is described. The laser consists of three cylindrical rods in series, each 250 mm long and 45 mm in diameter. Each rod is placed in a multielliptic reflector and is pumped by six direct flashlamps. The external cavity consists of one 99.6%-reflective dielectric mirror and a Q-switch placed between the first and second rods. The Q-switch consists of a cell made of two plane-parallel (error less than 1 min of arc) glass plates joined optically through a 1-cm-thick glass ring. The cell is filled with a polymethine-dye solution to a concentration at which the solution is 99% reflective at 1.06 μ. At maximum pumping energies, single 100—120-j, 20-nanosec pulses were obtained. By increasing the pumping energy or by

Card 1/2

UDC: 621.378.324:621.376

ACC NR: AP7002725

diluting the absorber solution, two or more pulses could be generated. In the case of two-pulse operation (50—80 nanosec repetition frequency), the total output was 200 j. The use of a phototropic liquid switch and large-diameter neodymium glass rods resulted in energy and power densities of 6 j/cm^2 and 0.3—0.4 Gw/cm^2, respectively.

SUB CODE: 20/ SUBM DATE: 27Oct66/ ORIG REF: 004/ OTH REF: 001 / ATD PRESS: 5111

Card 2/2

DOBRYAKOV, B.S., kand.med.nauk; ISAYENKO, V.I.

Two cases of torsion of dermoid cysts in girls 4 and 5 years of age. Akush. i gin. no.2:149 '65. (MIRA 18:10)

1. Khirurgicheskoye otdeleniye (zav. - kand.med.nauk B.S.Dobryakov) Kuybyshevskoy TSentral'noy rayonnoy i gorodskoy bol'nitsy Novosibirskoy oblasti (glavnyy vrach N.A.Moiseyenko).

Isayenko, V.N.

ISAYENKO, V.N., uchitel'

Training students during experimental work on the school plot.
Biol. v shkole no.6:45-51 N-D '57. (MIRA 10:12)

1. Turgenskaya srednyaya shkola Enbekshi-Kazakhskogo rayona Alma-Atinskoy oblasti.
(Enbekshi-Kazakhskii District--Biology--Study and teaching)

L 22846-66 EWT(1)/EWA(h)

ACC NR: AP6011589 SOURCE CODE: UR/0256/66/000/003/0091/0091

AUTHOR: Isayenko, V. P. (Engineer; Captain)

ORG: none

43
13

TITLE: Aircraft-alert plotting board and remote display

SOURCE: Vestnik protivovozdushnoy oborony, no. 3, 1966, 91

TOPIC TAGS: air defense system, aircraft defense, antiaircraft defense, antiaircraft fire control system

ABSTRACT: The author describes an aircraft-alert plotting board and visual repeater (see Fig. 1) for relaying information on aircraft type (size), bearing, and altitude from a visual-observation point to an antiaircraft-defense control point. On the repeater there are two aircraft silhouettes on each of 8 azimuth lines spaced 45° apart. The silhouettes form an inner and outer circle on the repeater, while on the plotting board there are correspondingly-located throw switches, as well as a back-lighting switch (for night operation) and a bell button. On both boards, the outer circle indicates high- and medium-altitude aircraft (above 1000 m), while the inner circle indicates low-altitude aircraft (below 1000 m), correspondingly represented by red and green lights behind the silhouettes on the repeater. Operation is as follows: As an aircraft passes over an observation point, the observer determines target bearing and type and, depending on the aircraft's altitude, throws the proper

Card 1/3

L 22846-66

ACC NR: AP6011589

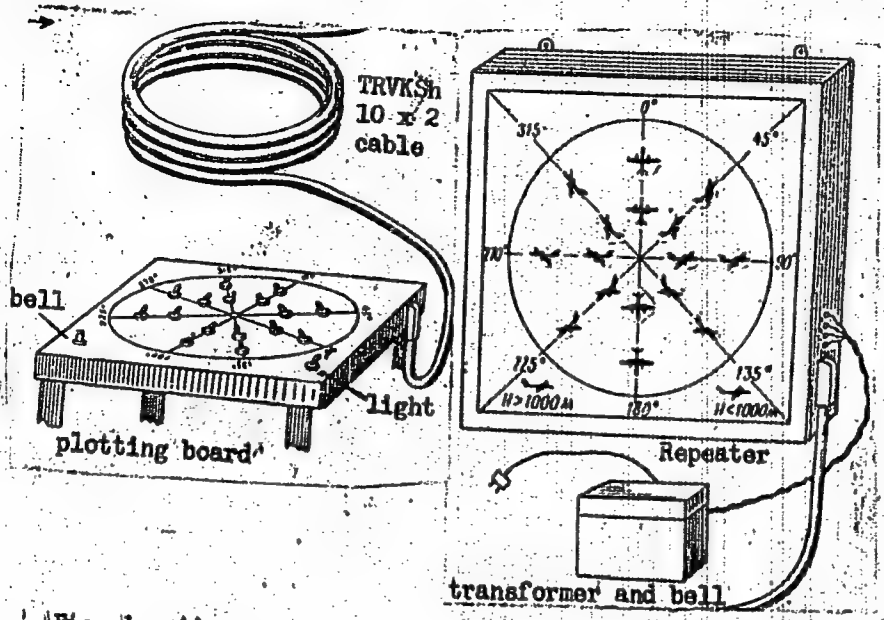


Fig. 1. Aircraft-alert plotting board and remote display.

Card 2/3

L 22846-66

ACC NR: AP6011589

switch on the plotting board and presses the button once for small aircraft and twice for large aircraft. This information is relayed by wire to the command point where it is displayed on the repeater and heard as a bell signal. The two units are connected by a TRVKSh 10 x 2 cable and are powered by a 220-volt line through a 6- or 12-v transformer. The plotting board also has a cover to protect it from rain. Orig. art. has: 1 figure.

[LB]

SUB CODE: 15, 19/ SUBM DATE: none/ ATD PRESS: 4/29

Card 3/3 BK

TVERDOVSKAYA, N.N.; MELEKHOV, I.S., akademik; ISAYENKO, Ye.M., red.

[Industrial use of the wood of fast-growing species (larch, poplar, birch, aspen, exotics); bibliographical index of Soviet and foreign literature for 1932-1962] Promyshlennoe ispol'zovanie drevesiny bystrorastushchikh porod (listvennitsa, topol', bereza, osina, ekzoty); bibliograficheskii ukazatel' otechestvennoi i inostrannoi literatury za 1932-1962 gg. Moskva, TSentr. nauchno-issl. in-t informatsii i tekhniko-ekon. issledovanii po lesnoi, tselliulozno-bumazhnoi, derevoobrabatyvaiushchei promyshl. i lesnomu khoz., 1963. 65 p. (MIRA 17:9)

1. Moscow. TSentral'naya nauchno-tekhnicheskaya biblioteka lesnoy i bumazhnoy promyshlennosti. 2. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for Melekhov).

KOZHEVNIKOV, A.D.; PINES, M.I.; FORTUNATOV, V.A.; GONIK, A.A., nauchn. red.; ISAYENKO, Ye.M., red.

[Basic capital assets in lumber floating] Osnovnye fondy lesosplava. Moskva, TSentr. nauchno-issl. in-t informatsii i tekhniko-ekon. issledovanii po lesnoi, tselliulozno-bumazhnoi, derevoobrabatyvaiushchei promyshl. i lesnomu khoz., 1964. 16 p. (MIRA 18:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut lesosplava (for Kozhevnikov, Pines).

KORCHUNOV, N.G., prof., red.; LEONT'YEV, S.I., red.; ISAYENKO, Ye.M., red.; RAKHMANKIN, S.G., red.; KASATKINA, N.P., red.

[Ways for the development of land transportation of lumber] Puti razvitiia sukhoputnogo transporta lesa; sbornik statei. Moskva, TSentr. nauchno-issl. in-t informatsii i tekhniko-ekon. issledovanii po lesnoi, tselliulozno-bumazhnoi, derevoobrabatyvaiushchei promyshl. i lesnomu khoz., 1964. 168p. (MIRA 18:1)

1. Leningradskaya lesotekhnicheskaya akademiya im. S.M. Kirova (for Korchunov).

ISAYENKO, Ye.M., red.

[Wave-resisting cigar-shaped rafts and the unloading of full-length log bundles] Volnoustoichivye sigary i vygruzka khlystovykh puchkov. Moskva, 1964. 20 p. (MIRA 18:6)

1. Moscow. TSentral'nyy nauchno-issledovatel'skiy institut informatsii i tekhniko-ekonomicheskikh issledovaniy po lesnoy, tsellyulozno-bumazhnoy, derevoobrabatyvayushchey promyshlennosti i lesnomu khozyaystvu.

DONSKOY, I.P., nauchn. red.; BAKLASHOVA, R.A., red.; ISAYENKO, Ye.M., red.

[Ways for water transportation of lumber] Puti razvitiia vodnogo transporta lesa. Moskva, 1964. 28 p. (MIRA 18:5)

1. Moscow. TSentral'nyy nauchno-issledovatel'skiy institut informatsii i tekhniko-ekonomicheskikh issledovaniy po lesnoy, tsellyulozno-bumazhnoy, derevoobrabatyvayushchey promyshlennosti i lesnomu khozyaystvu.

KLIMOV, N.M., doktor biologicheskikh nauk; MALAKHOV, A.G., kand.veterinarnykh nauk; ISAYENKO, Ye.P., mladshiy nauchnyy sotrudnik

Purification of hog cholera virus by means of electrophoresis. Trudy VIEV 22:195-201 '59. (MIRA 13:10)
(Hog cholera) (Electrophoresis)

SAPIRO, L.S.; ISAYENKO, Yu.A.; MASLOV, V.A.; ZOLOTAREVSKIY, D.A.

Causes of porosity in joints welded under assembling conditions. Stroi. truboprov. 9 no.4:13-14 Ap '64. (MIRA 17:9)

1. Kustovoy otdel svarki Donetskogo soveta narodnogo khozyaystva (for Sapiro, Isayenko, Maslov). 2. Donetskiy politekhnicheskiy institut (for Zolotarevskiy).

34493
S/109/62/007/002/013/024
D266/D303

9,1300

AUTHOR: Isayenko, Yu.M.

TITLE: Mode conversion at the joint of two overmoded waveguides of slightly different cross-section

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 2, 1962, 298 - 309

TEXT: The purpose of the paper is to calculate the amplitudes of the spurious modes excited by a joint in an overmoded waveguide. The author uses a more rigorous approach than in previous attempts when only the incident wave and one spurious mode was taken into account. The general formula for calculating the amplitudes of spurious modes is obtained by applying a method originally proposed by Ya.N. Fel'd (Ref. 8: Osnovy teorii schelevykh antenn, izd. Sovetskoye radio, 1948) and further developed by M.B. Zakson (Ref. 9: Dokl. AN SSSR, 1949, 66, 4, 637). These general formulae are too complicated even for small deformation of the cross-section; therefore, the author restricts the investigation to the simultaneous presence

Card 1/3

Mode conversion at the joint ...

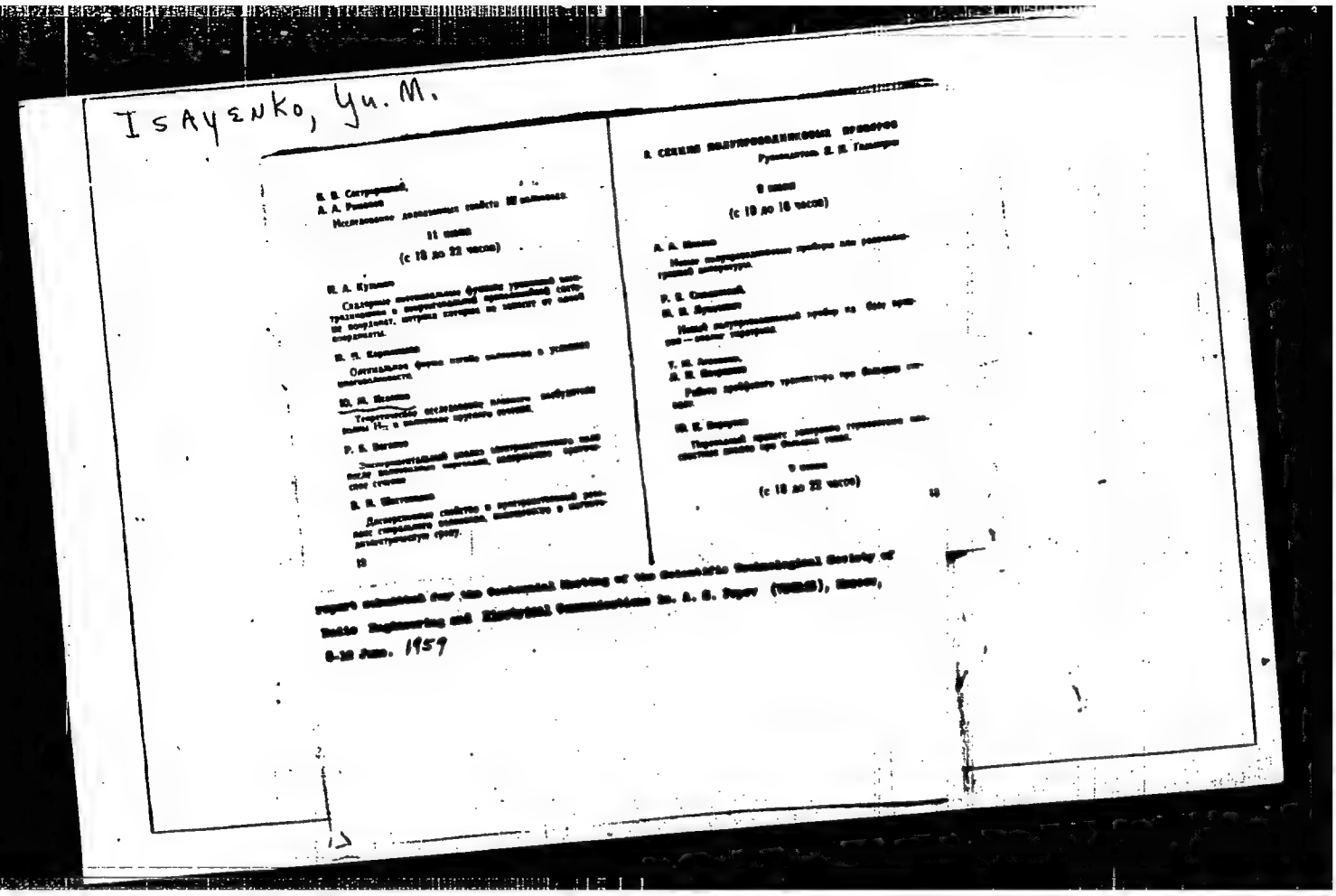
of four waves, the incident and reflected main mode and one of the spurious modes scattered in both directions. The results are valid in the whole frequency spectrum - including the cut-off frequency. If $h^{(1)} = h^{(2)}$, i.e. the propagation coefficient of the spurious mode is the same in both waveguides to be connected. The author determines also the maximum power which a spurious mode can carry. In this case the power is equally divided between the four waves. All these phenomena are, however, very much weakened if the finite conductivity of the waveguide walls is taken into account or if the propagation coefficients of the two waveguides are not identical. The author finally concludes that if a fairly uniform frequency characteristic is to be attained the propagation coefficients of subsequent waveguides should somewhat differ. In practice this requirement seems to be satisfied due to manufacturing tolerances. Three concrete examples are worked out and numerical results given: 1) Offset rectangular waveguides fed by an H_{10} mode; 2) Circular waveguides of slightly different diameter fed by an H_{01} mode; 3) Same with finite conductivity. There are 5 figures, 2 tables and 14 references: 9 Soviet-bloc and 5 non-Soviet-bloc. The 4 most recent

Mode conversion at the joint ...

references to the English-language publications read as follows: R.W. Friis, A.S. May, Electr. Engng., 1958, 77, 6; S. Iiguchi, Mode conversion in the transmission of TE_{01} wave through a slight tilt and slight off-set of waveguide, Congress internationale circuits et antennes hyperfrequences, Pairs, Octobre, 1957; E.T. Jaynes, Ghost modes in imperfect waveguides, Proc. IRE. 1958, 46, 2, 416; E. A. Marcatili, Bell System Techn. J., 1961, 40, 1, 149.

SUBMITTED: May 3, 1961

Card 3/3



Isayenko, Yu. M.

APPROVED FOR RELEASE: 04/03/2001 CIA-RDP86-00513R000618810020-5"

9.1300

66710

AUTHOR: Isayenko, Yu.M. SOV/109-4-8-31/35

TITLE: A Smooth Exciter of the H_{01}-mode in a Circular Waveguide

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 1398 - 1402 (USSR)

ABSTRACT: The device considered is illustrated in Figure 1 (Ref 6). The transition from a rectangular waveguide (see the section AA in Figure 1) to a circular one is effected gradually via a number of trapezium-shaped sections (BB) to a triangle (CC) and then gradually to sections (DD, EE) and, finally, to a point (FF). The amplitudes of the parasitic waves at the output of this type of exciter can be evaluated by using the transverse cross-section method (Ref 7). Assuming that the walls of the system are ideally conducting, the magnetic waves can be described by Eq (1), while the electric waves are defined by Eq (4). The coordinates used in the equations are defined in Figure 2. The graph illustrating the change of the normalised phase constants along the exciter is shown in Figure 3 for even q for both types of waves.

Card1/3

A Smooth Exciter of the H_{01}-mode in a Circular Waveguide

From this it can be concluded that the section AA-CC does not contribute to the formation of the parasitic waves. The amplitude of a parasitic wave at the output of the exciter can be evaluated from Eq (5), whose first term is defined by Eqs (6) and (7). Eq (5) can be written in a simpler form as Eq (8). The solution of this is given by Eq (9). On the basis of Eq (9) and Eqs (6) and (7), it is possible to determine the amplitude of various parasitic waves. The amplitudes for the waves E_{11}, H_{11}, H_{21} and H_{31} are given by Eqs (10), (11), (12) and (14), respectively. The above formulae were used to design an exciter having the following parameters: $ka = 4.62$ and $(d\varphi_o/dz)a = 0.63 = \text{const.}$

It was found that the overall losses for the four waves amounted to 0.19 db.

The author expresses his gratitude to B.Z. Katsenelenbaum for valuable advice and to V.V. Malin for carrying out the calculations.

4

Card2/3

66710

SOV/109-4-8-31/35

A Smooth Exciter of the H_{01}-mode in a Circular Waveguide

There are 4 figures and 9 references, 2 of which are English, 2 French and 5 Soviet; 1 of the Soviet references is translated from English.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio-engineering and Electronics of the Ac.Sc.USSR)

SUBMITTED: December 25, 1958

4

Card 3/3

KERZHENTSEVA, N.P., nauchnyy sotrudnik [translator]; ISAYENKO, Yu.M., nauchnyy sotrudnik [translator]; MERIAKRI, V.V., nauchnyy sotrudnik [translator]; SHTEYNSHLEYGER, V.B., kand.tekhn.nauk, red.; DANILOV, N.A., red.; IOVLEVA, N.A., tekhn.red.

[Low-loss wave guide transmission lines; collection of articles translated from the English] Volnovodnye linii peredachi s malymi poteriami; sbornik statei. Moskva, Izd-vo inostr.lit-ry, 1960. 478 p. (MIRA 13:6)

1. Institut radiotekhniki i elektroniki Akademii nauk SSSR (for Kershentseva, Isayenko, Meriakri).
(Wave guides) (Microwaves)

ISAYENKO, Yu.M.

Scattering of waves at the junction of two multimode wave guides with almost equal cross sections. Radiotekh. i electron. 7 no.2: 298-309 F '62. (MIRA 15:1)

(Wave guides)

40939

S/109/62/007/007/007/018
D266/D308

AUTHORS: Isayenko, Yu. M., Malin, V. V., and Malinza, Z. A.

TITLE: Analysis of a set of waves in circular waveguide with impedance boundary conditions on the wall

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 7, 1962, 1106-1114

TEXT: The purpose of the paper is to describe a method for the determination of the eigenvalues of waves in a circular waveguide having anisotropic surface impedance. The authors investigate a helical or ring structure (period small in comparison with the wavelength) where the circumferential impedance is zero and the axial impedance is Z. Solving Maxwell's equations with the aid of the electric and magnetic Hertz vectors, the following equation is obtained for the eigenvalue x:

Card 1/4

$$D = -i \frac{x J_n(x) J_n'(x)}{J_{n-1}(x) J_{n+1}(x) - \frac{n^2}{(ka)^2} J_n^2(x)} \qquad (3)$$

where $D = kaZ$, $k = 2\pi/\lambda$, a - radius of the waveguide, $J_n(x)$ - n-th order Bessel function of the first kind. Here $D = f(x)$ is a single-valued function, but $x = \varphi(D)$ is multivalued. The physical interpretation of the multivalued character is that as D varies, new waveguide modes emerge which may have the same eigenvalues. Mathematically the difficulty is circumvented by using the Riemann surfaces of the complex plane. The dividing line between slow waves and fast waves is determined. The numerical results are obtained with the aid of an electronic computer БЭСМ-2 (BESM-2), but for the limiting cases analytical expressions are derived. If

Analysis of a set ...

$D \longrightarrow 0$

$$x = x_0 + i \frac{\hbar^2 D}{x_0(1 - x_0^2)} \qquad (6)$$

where x_0 - eigenvalue of the equivalent metal waveguide, $\hbar = \sqrt{1 - (x_0/ka)^2}$. The formula is valid if

$$\frac{|D|}{x_0^4} < 0{,}02 \qquad (7)$$

If $D \longrightarrow \infty$

Card 3/4